

What is claimed is:

1           1.       A fuel cell system comprising:  
2           a fuel cell subsystem comprising a fuel cell stack adapted to furnish power to a  
3           load;  
4           a battery;  
5           a first circuit adapted to connect the battery to the load when the fuel cell  
6           subsystem substantially delays in responding to a change in the power;  
7           a current sensor to indicate a current through the fuel cell stack; and  
8           a second circuit coupled to the current sensor to monitor cell voltages of the fuel  
9           cell stack, determine the minimum of the cell voltages and prevent the current from  
10          exceeding a maximum threshold current based on the minimum cell voltage.

1           2.       The fuel cell system of claim 1, wherein the first circuit is further adapted  
2           to disconnect the battery from the load when the fuel cell subsystem responds to the  
3           change.

1           3.       The fuel cell system of claim 1, wherein the fuel cell subsystem comprises:  
2           a fuel cell stack adapted to receive a hydrogen flow; and  
3           a fuel processor to produce the hydrogen flow.

1           4.       The fuel cell system of claim 3, wherein the fuel cell subsystem further  
2           comprises:  
3           a controller adapted to monitor the power and regulate a rate at which the fuel  
4           processor produces the hydrogen flow based on the monitored power.

1           5.       The fuel cell system of claim 1, wherein the first circuit is further adapted  
2           to connect the battery to the load based on a fuel cell stack voltage of the fuel cell  
3           subsystem.

6. The fuel cell system of claim 1, wherein the first circuit comprises:  
a first diode to couple the battery to the fuel cell subsystem when a stack voltage  
of the fuel cell subsystem is near a predefined threshold voltage.

7. The fuel cell system of claim 1, wherein the second circuit comprises:  
a voltage regulator adapted to regulate a stack voltage of the fuel cell stack and  
limit the current through the stack.

8. A method comprising:  
using a fuel cell stack to furnish power to a load;  
connecting a battery to the load in response to the fuel cell stack substantially  
delaying when responding to a change in the power;  
monitoring a current through the fuel cell stack;  
monitoring cell voltages of the fuel cell stack;  
determining the minimum of the cell voltages; and  
preventing the current from exceeding a maximum threshold current based on the  
minimum cell voltage.

9. The method of claim 8, further comprising:  
disconnecting the battery from the load when the fuel cell subsystem responds to  
the change.

10. The method of claim 8, further comprising:  
monitoring the power;  
producing hydrogen;  
regulating a rate of the production in response to the monitoring; and  
providing the hydrogen to a fuel cell stack of the system.

11. The method of claim 8, further comprising:  
connecting the battery to the load based on a fuel cell stack voltage of the fuel cell  
subsystem.



1 16. The fuel cell system of claim 15, further comprising:  
2 a predefined threshold voltage of  $-0.35$  volts.

1 ~~17.~~ The fuel cell system of claim 15, further comprising:  
2 a predefined threshold voltage of more than  $-0.4$  volts.

1 ~~18.~~ The fuel cell system of claim 15, further comprising:  
2 a predefined threshold voltage of more than  $-0.5$  volts.